

Transoral Robotic Retropharyngeal Lymph Node Dissection in Nasopharyngeal Carcinoma

With Retropharyngeal Lymph Node Recurrence

Xi Ding #, Qing-Guang Lin #, Xiong Zou#, Yi-Jun Hua, You-Ping Liu, Yu-Long Xie.....Ming-Yuan Chen*

Department of Nasopharyngeal carcinoma, Sun Yat-sen University Cancer Center, Guangzhou, China

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Background

1. RPLNs are the first echelon lymph nodes for the nasopharynx, and metastatic RPLNs are most commonly observed in NPC, with an incidence rate of 64.2%–75.1%.
2. RPLN metastasis (regardless of laterality) has been considered N1 disease in AJCC staging system because NPC patients with RPLN metastasis share a similar risk of unilateral cervical lymph node metastasis.
3. Reirradiation for RPLN recurrence can lead to severe radiotoxicity.
4. Salvage surgery for recurrent RPLN disease is more challenging because the complex anatomy and proximity to vital structures make it difficult to gain access and avoid fatal complications.
5. Several attempts have been made to adopt TORS in RPLN dissection for HNSCC. However, TORS for RPLN recurrence in NPC has not been reported to date.

Method

1. Patients selection

Enrollment criteria: 1) NPC patients diagnosed with RPLN recurrence by pathological or radiological diagnosis; 2) recurrent RPLN size ≤ 1.5 cm or reduced to no more than 1.5 cm after induced chemotherapy; and 3) mouth opening range >4 cm.

Exclusion criteria: 1) significant extranodal invasion such as the invasion of the internal carotid artery (ICA), skull base bone, or extensive lymph node extracapsular spread; 2) combination with an unresectable recurrent nasopharyngeal lesion or cervical lymphatic nodes; 3) the presence of distant metastasis; 4) a positive ICA balloon occlusion test (BOT); or 5) physiologically unsuitable for surgery.

2. Special examinations and induction chemotherapy

Every patient also received PET-CT preoperatively to confirm the diagnosis from MRI. The ICA-BOT was performed under digital subtraction angiography (DSA) guidance before every procedure, and only patients with a negative BOT underwent surgery in order to avoid ischemic events once the ICA blows out. When operators faced a case with a high risk of damaging the ICA before surgery, such as a case in which the RPLN was close to the artery, then ICA embolization was performed 1 month before TORS-RPLND.

For patients with relatively large RPLNs, such as larger than 1.5 cm, that were difficult to resect completely without injury to crucial tissues, we applied induction chemotherapy to shrink the bulk of tumor and performed the surgery 3 weeks later.

Results

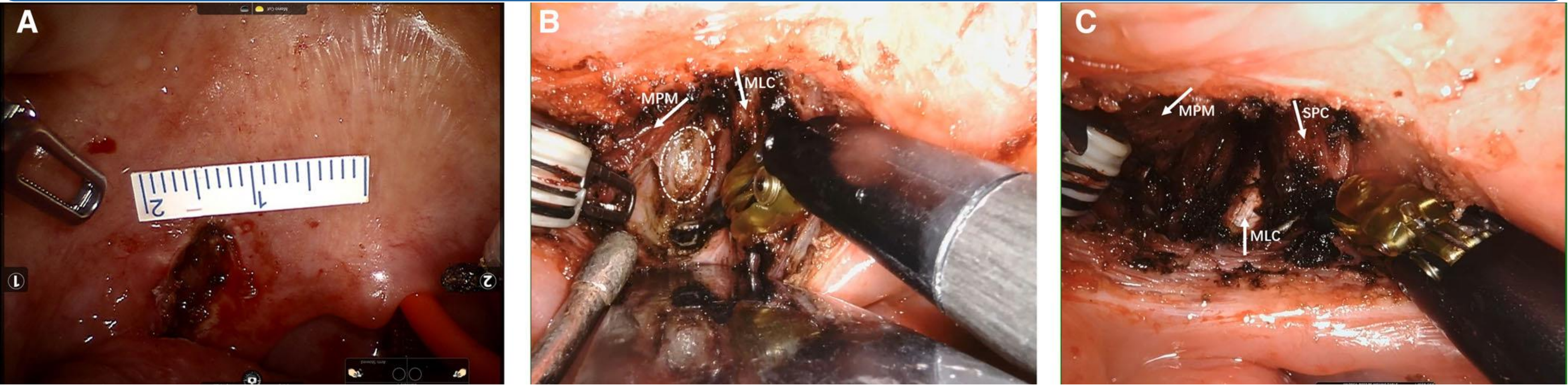


FIGURE 1. Retropharyngeal lymph node dissection procedures via transoral robotic surgery. Panel A. Surgical incision; Panel B. Exposure of the RPLN; Panel C. After resection of the RPLN. The white circle indicates the retropharyngeal lymph node (RPLN). MPM = medial pterygoid muscle; MLC = musculus longus capitis; SPC = superior pharyngeal constrictor.

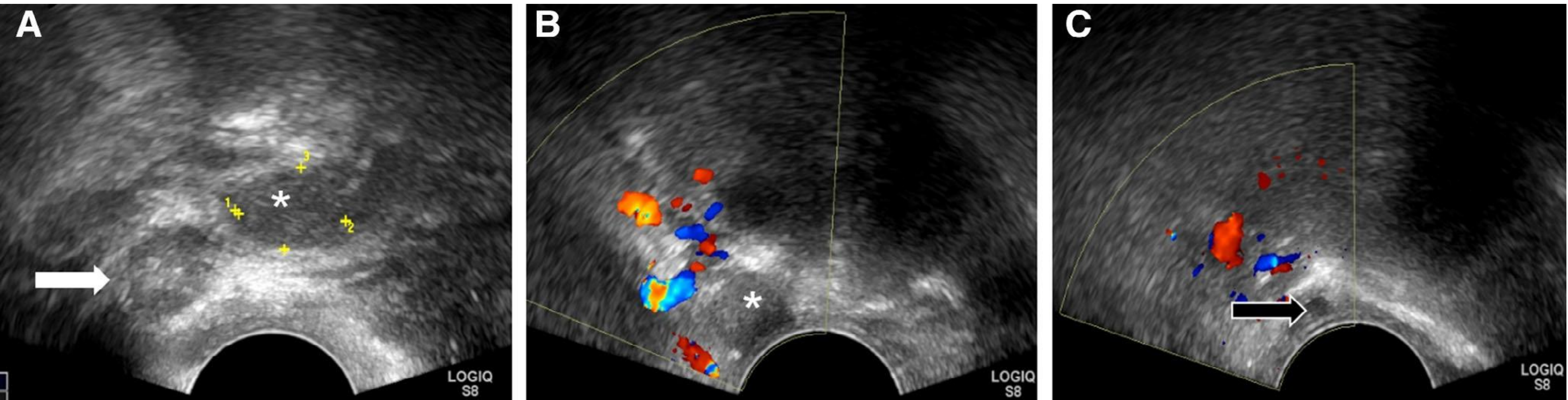


FIGURE 2. Intraoperative and postoperative ultrasonography. Panel A. Ultrasound exploration of the retropharyngeal space; Panel B. After removing the adipose tissue in the parapharyngeal space, the RPLN was displayed clearly under the ultrasound probe; Panel C. After resection of the RPLN, ultrasonography revealed the remnant cavity and confirmed the completeness of surgery. *Indicates the RPLN; the white arrow indicates the musculus longus capitis; the black arrow indicates the remnant cavity of the resected RPLN.

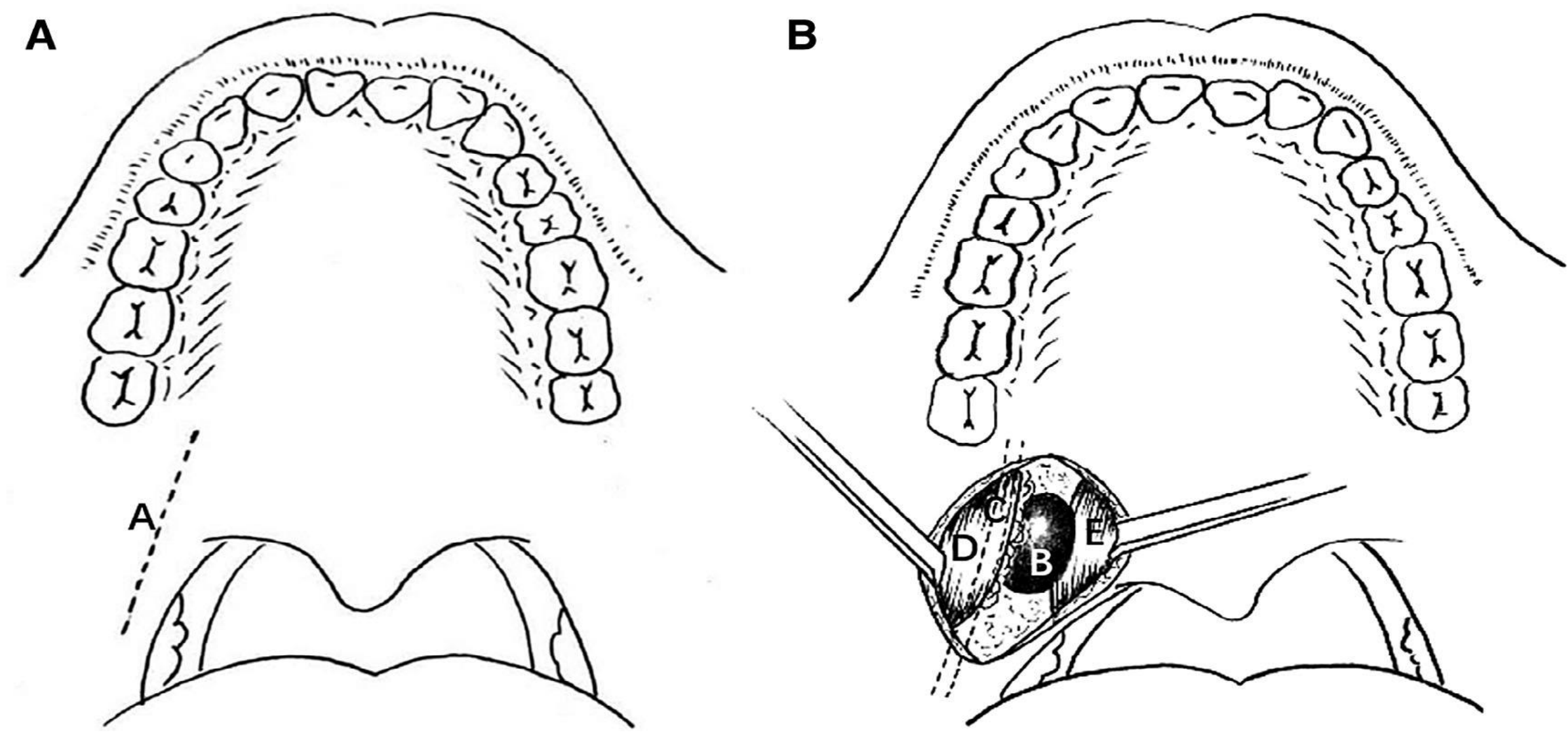
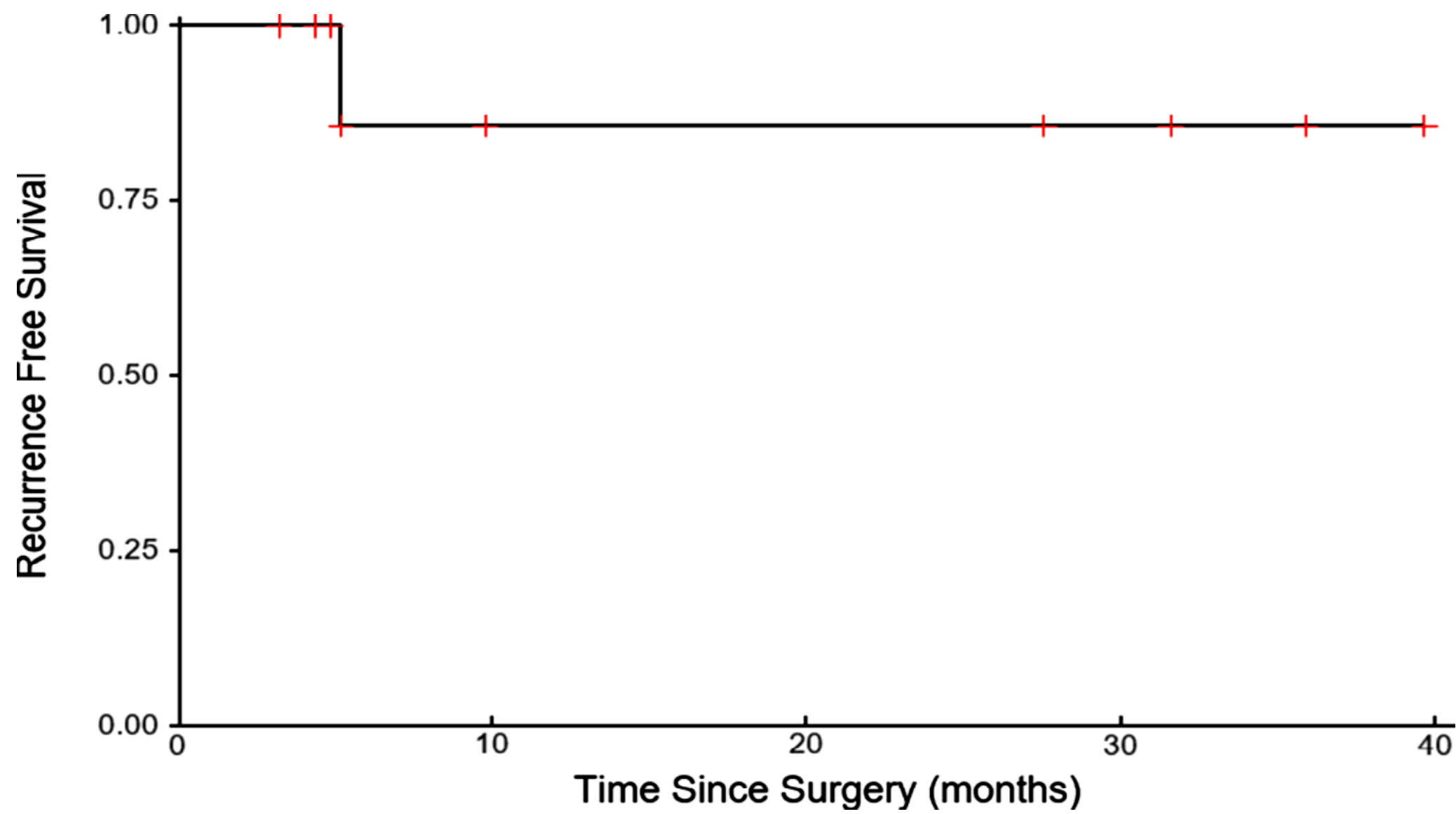


FIGURE 2. Diagram depicting the surgical approach. A, surgical incision; B, retropharyngeal lymph node; C, ICA; D, medial pterygoid muscle; E, musculus longus capitis.



Conclusion

TORS-RPLND is feasible, safe, and effective for treating NPC patients with RPLN recurrence. Intraoperative ultrasound positioning can make the operation smoother and increase the success rate. Studies with a larger sample size are required to confirm our results.

Acknowledgments

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Correspondence

Corresponding author: Ming-Yuan Chen, MD, Department of Nasopharyngeal Carcinoma, Sun Yat-sen University Cancer Center, 651 Dongfeng East Road, Guangzhou, Guangdong, 510060, P. R. China. Email: chmingy@mail.sysu.edu.cn

Patient	sex/age (y)	initial clinical stage	RPLN recurrence interval (mon)	size of the RPLN (mm)	nasopharyngeal recurrence	neck lymph node recurrence/residual	operation	preoperative chemotherapy	intraoperative ultrasound	operative time (min)	intraoperative blood loss (ml)	incision healing time (mon)	dysphagia (grade)	follow-up (mon)/status
2017-2018														
1	male, 47	T2N1M0	12	10*9	(-)	(-)	TORS-RPLND	NO	NO	140	10	2	0	39, NED
2	male, 32	T3N2M0	11	14*10	(-)	(+) both	TORS-RPLND+SNd	YES	NO	520	150	6	3	35, NED
3	male, 37	T1N1M0	23	10*8	(-)	(-)	TORS-RPLND+SNd	NO	NO	390	50	12	0	31, NED
4	male, 34	T3N2M0	16	14*12	(-)	(-)	TORS-RPLND+SNd	NO	NO	342	30	3	1	27, LWR
5	male, 35	T3N2M0	19*	10*9	(+)	(+) both	ENPG+SNd+TORS-RPLND+ postoperative radiotherapy	NO	NO	430	50	3	1	26, NED
2020														
6	female, 36	T3N2M0	22	9*8	(-)	(-)	TORS-RPLND	YES	YES	260	20	1	0	3, NED
7	male, 45	T3N2M0	13	14*12	(-)	(-)	TORS-RPLND	YES	YES	250	50	3	1	6, NED
8	male, 43	T1N2M0	18	18*15	(-)	(-)	TORS-RPLND	YES	NO	190	10	3	0	1, NED
9	female, 41	T3N1M0	19	10*8	(-)	(-)	TORS-RPLND	NO	NO	205	5	3	0	1, NED
10	female, 38	T3N2M0	39	13*10	(-)	(-)	TORS-RPLND	YES	NO	240	20	1	0	1, NED